

ITEA 2

M

Magazine

SEPTEMBER 2011 • NO. 10



## Cross-border cooperation for clean technologies

Co-summit 2011 in Helsinki!

## Software drives Finnish exports

Focus on Finland

## Defining & validating physical systems in a virtual world

MODELISAR & UsiXML



ITEA 2

INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

European leadership in Software-intensive Systems and Services – [www.itea2.org](http://www.itea2.org)

ITEA 2 is a EUREKA strategic ICT Cluster programme

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INFORMATION TECHNOLOGY FOR EUROPEAN ADVANCEMENT

ITEA 2 (Information Technology for European Advancement) is Europe's premier industry-driven co-operative programme for pre-competitive R&D in Software-intensive Systems and Services (SISS).

As a EUREKA Cluster programme, ITEA 2 stimulates and supports projects that will give European industry a leading edge in the area of SISS.

**M** – ITEA 2 Magazine is published three times per year by the ITEA 2 Office. Its aim is to keep the ITEA 2 community around the ITEA 2 projects updated about the ITEA 2 programme status and progress, achievements, projects and events.

An online version is available at [www.itea2.org](http://www.itea2.org)

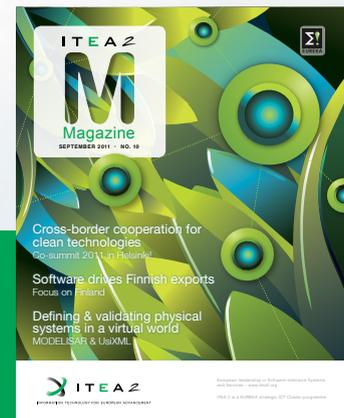
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Submissions: The ITEA 2 Office is interested in receiving news or events linked to the ITEA 2 programme, its projects or in general: R&D in the Software-intensive Systems and Services field. Please submit your information to [communications@itea2.org](mailto:communications@itea2.org).

Opinions expressed in the M – ITEA 2 Magazine do not necessarily reflect those of the organisation.

Special thanks to all contributors to this issue of the M – ITEA 2 Magazine.

## Adaptability in a mature organisation



**Fopke Klok**  
*ITEA 2 Office Director*

I believe that ITEA is a mature organisation with effective and efficient processes based on continuous improvement and with involvement of its key stakeholders. During my first participation in meetings of ITEA bodies, at the ITEA Authorities Committee (ITAC) and ITEA Board Support Group (BSG) meeting in Vienna in May 2007, I was impressed by the quality of the joint evaluations of the project outlines. Both from contents and process viewpoints this was an excellent meeting, especially when you realise that the people around the table are all from different organisations and countries.

Of course the ITEA Office plays its role here: maintaining the collective knowledge and experience of the organisation and acting as a well-oiled machine which is steered by industry with ease and confidence, and supported by the public authorities. And the machine has continued to improve in various directions.

Over the last few years, we have introduced a new and much better contribution scheme with an invoicing process which takes into account the real project-funding status per country and per partner. This contribution scheme is at the core of a more stable and predictable financial basis for the ITEA operations. More recently we have introduced approaches to reduce the time between project idea and project start.

Communications on the results and the people behind the ITEA projects is also subject to continuous improvement: this magazine remains to be very well received by its target group, our golden book – '12 years of ITEA' was a major highlight in 2010, and of course the Co-summit with ARTEMIS(-IA) and the Project Outline preparation days are annual events with increasing participation and impact. The contents and quality of our public website [www.itea2.org](http://www.itea2.org) and our restricted community website <https://community.itea2.org> as well as our internal office website are continuously being enriched.

All information available in the ITEA Office on our projects and events, the people and their organisations is increasingly being used as an asset for our community rather than just being an internal tool for the Office. Our ICT system has been subject to an encouraging external audit which will lead to further improvements in reliability and flexibility of the ITEA processes.

On this solid basis we are preparing ITEA 3, for which the environment is very dynamic. We see a less stable economic situation at national, European and global levels; we see on-going discussions on new initiatives by the European Commission. In such a dynamic environment it is not enough to only look

at one's own organisation. We will translate changes in the environment into the ITEA organisation's focus and strategy. The previous Sherpa group with ARTEMIS was an example which has led to a joint document and clarified positioning of ITEA in relation to ARTEMIS up to 2013. Currently, a working group of ITAC and BSG on the road to ITEA 3 is looking for ways to protect the qualities developed in ITEA while ensuring adaptability to changing economic and political environments, not only looking to Europe but also to developments outside Europe.

Fopke Klok

# CO-SUMMIT 2011

## Cross-border cooperation for clean technologies

On 25 and 26 October, the ITEA & ARTEMIS Co-summit 2011 will be held in the Scandic Marina Congress Center in Helsinki, Finland. It will be the fourth edition of the Co-summit, with over 600 participants expected from industry, academia, public authorities and press. This year, the two-day event will focus on the theme 'Cross-border cooperation for clean technologies'.

### CROSS-BORDER COOPERATION IS KEY

ITEA and ARTEMIS are different instruments but with one mission: strengthening and improving Europe's competitiveness and the well-being of European society through ICT-based innovation under the leadership of European industry. Addressing societal challenges such as healthcare and well-being, mobility, security, sustainability and efficient resource and energy management is deeply rooted in the programmes' ambitions for the coming decade. These societal challenges need a multidisciplinary co-operative approach across borders in the broadest sense; cooperation between organisations, countries, value chains, technologies, application domains, industries, clusters and disciplines. This year's theme emphasises this: cross-border cooperation for clean technologies.

### PIVOTAL FOCUS ON PROJECTS

Once again, the ITEA and ARTEMIS project exhibitions will be the pivotal elements of the event. Co-summit

participants will be able to observe European research excellence first hand in the ITEA & ARTEMIS exhibitions showcasing 75 innovative and market-oriented R&D projects. The exhibitions will be open on both event days. The Co-summit organisation also welcomes other different European competitiveness clusters and national R&D projects on the exhibition floor.

This year, the exhibitions will also have a direct link to the event theme with a special focus area to demonstrate that cross-border cooperation is key to clean technologies. This area will consist of ITEA and ARTEMIS projects stands and other EUREKA Clusters in the clean technologies domain: ACQUEAU and EUROGIA+.

### THE PROGRAMME – AN EXCITING BLEND

The 2-day programme is an exciting blend of different topics and viewpoints from industry and public authorities. Some programme elements are still to be confirmed.

On Tuesday 25 October, the plenary programme starts with a welcome speech by Mr Jouni Hakala, Finnish State Secretary for Economic Affairs of the Ministry of Employment and the Economy. Furthermore the programme includes a keynote speech by Prof. Ken Sakamura of the University of Tokio on 'Ubiquitous Computing and the Efforts to Cope with Disasters' and a panel session on the Co-summit theme with speakers from industry and public authorities.

In the afternoon, three different parallel sessions will be held on the following topics:

- Automotive – facilitated by Marco Ottella of Centro Ricerche FIAT;
- Healthcare – facilitated by Casper Garos of Philips Healthcare; and
- Security – facilitated by Janne Järvinen of F-Secure.

These sessions will include speakers from related ITEA and ARTEMIS projects and external experts on the different topics.

Wednesday 26 October, the second Co-summit day, will focus on the messages from both communities with plenary presentations on the current status and future of the programmes and presentations of the ITEA Achievement Awards nominees. This year's nominees are:

- METAVERSE1: Setting global standards between real and virtual worlds;

- MULTIPOL: Securing access across multiple domains; and
- USENET: Pioneering a horizontal approach in ubiquitous machine-to-machine networking.

The Co-summit organisation is honoured to have a closing plenary speech by Mrs Cécile Dubarry, Director of the Service for Communication and Information Technologies, DGCIS of the French Ministry of Economy, Industry and Employment, as host for the 2012 Co-summit. The event will come to an end with a shared ceremony for the Exhibition Awards.

#### STUDENT DAY

ITEA and ARTEMIS are co-operating with the University of Helsinki, Tampere University of Technology and Aalto University to organise a student day for Finnish masters and PhD students focused on the scopes of ITEA and ARTEMIS. The students will be invited to attend the plenary programme, the exhibition and a special student Master Class on the first Co-summit day.

#### JOIN US AND REGISTER!

For more information and registration, visit the

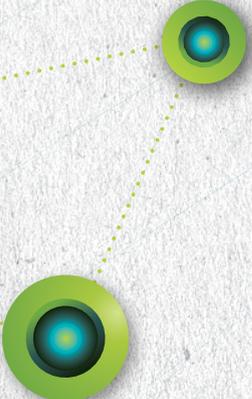
Co-summit website:

[www.itea2.org/cosummit2011](http://www.itea2.org/cosummit2011).

The registration deadline is  
23 September.

# Co-summit 2011 parallel sessions

A series of parallel sessions will be held in the afternoon of the first day of the Co-summit (25 October). Session facilitators have prepared a summary to give you a sneak preview of the sessions.



## Automotive: Is electric mobility the ultimate solution for 21st century mass transport?

**Facilitator: Marco Ottella, Centro Ricerche FIAT**

Electric vehicles are expected to be an answer to the shortage of fossil fuel resources and for the complete deployment of renewable energy in a world where, at the same time, the number of electrically propelled vehicles is rapidly catching up with that of internal-combustion engine (ICE) powered ones and the production of energy from renewable resources is overtaking that from nuclear sources.

However this is still not enough to address other big problems in large urban areas: traffic congestion and road fatalities. The latter is still a primary cause of death and permanent injuries in OECD countries, while the former is the most important waste of time and an important source of stress.

Some 50 years of progress in ICT has improved our lives at home, in our offices and in our factories, and is expected to produce an even higher impact on the

way we move. For instance, ICT is already speeding up our trips and making them more comfortable by smart seamless multimodality – already available on smart phones and integrated navigation services. Moreover, in the near future, it will allow our cars to drive by themselves, guided by the infrastructure or by artificial intelligence, and will make our vehicles cleaner, quieter, more efficient and less expensive. Finally, ICT will allow us full 3D mobility.

Featured speakers will discuss evolutions in ICT and the introduction of advanced personal transport systems ranging from urban electric means to driverless electric and ICE cars and personal aircrafts.

# Healthcare: Embedded Systems for the healthcare life cycle

## CO-SUMMIT 2011

**Facilitator: Casper Garos, Philips Healthcare**

The global trends in healthcare will have a dramatic impact on society and healthcare markets. Demographics will change with an aging population and growth in the number of age-specific diseases. Globally, economic standards are rising – especially in emerging countries – and the demand for affordable and high quality healthcare will increase worldwide. This growth will augment the shortage of professional staff. The expectation is that spending on healthcare costs will rise to 15% of gross domestic product (GDP) in many countries.

All this requires novel affordable solutions in the healthcare area throughout the healthcare life cycle – the so-called 'Care Cycle'.

The goal of this session is to show the:

- Added value and contribution of ITEA 2 and ARTEMIS projects to tackling the societal challenges around the increasing costs of healthcare and offering affordable care to the aging population; and
- Growth of the ecosystem around healthcare within the software and systems community.

We will address the total life cycle from being healthy and taking preventive measures at home, early diagnosis of diseases, detailed diagnoses and image-guided intervention and providing the right amount of monitoring during revalidation. The session will focus on the contribution of embedded systems to

meeting healthcare challenges with several projects demonstrating potential solutions for the challenges ahead.

The projects involved will explain their approach and results, each covering part of the care cycle and showing the market opportunities for the results. More and more people want to stay independent – for example at home – as long as possible. The Chiron and Midas projects address solutions for home healthcare and support for the aging society. The Care4Me and Chiron projects address image-guided intervention and home monitoring during revalidation. The Aimes project addresses a novel solution for tracking equipment in hospitals.

Finally, we will have a discussion on how to become even more effective in finding solutions from the embedded-systems ecosystems around healthcare to address further the global trends in this market.

## Trends in ICT security

**Facilitator: Janne Järvinen, F-Secure**

The objective of this parallel session is to produce a compelling analysis of trends in the field of ICT security from the viewpoint of European industry.

Security is becoming crucial for the digital world as the influence of ICT is spreading to many different industries and communities. ITEA 2 and ARTEMIS have already supported many projects on this topic. This session is dedicated to sharing a vision of significant trends in ICT security among our communities. The session viewpoint is of European industry and it covers different layers in the field including security policies, protocol security and hardware security.

To give this viewpoint, we intend to cover at least the following topics:

- A security landscape overview – Mika Ståhlberg, VP Security Labs, F-Secure;
- Security in software protocols in the cloud – Juha Rönning, University of Oulu;
- Security policies management – Thierry Winter, Bull/Evidian; and
- Hardware security issues – Hassan Triqui, CEO, Secure IC.

# Software drives Finnish exports

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Information and communications technology (ICT) makes a major contribution to the gross domestic product (GDP) of Finland with software-dependent products now responsible for over half of the country's exports. Public applied research funding is the task of Tekes – the Finnish Funding Agency for Technology and Innovation. EUREKA Clusters – particularly ITEA 2, CELTIC and CATRENE – are an important element of national research strategy.

The annual turnover of the core ICT, electronics, telecommunications and software industries in Finland was some €70 billion in 2010 with these industries accounting for around one third of Finnish GDP directly and indirectly. Major contributors include global mobile phone and telecommunications network leader Nokia, power and automation technology giant ABB and medical equipment companies.

“New figures show that the turnover of companies whose business and products are strongly dependent

on software is about one third of our industrial turnover – so the importance of software outside the software business is clearly very big,” says Matti Sihto, programme manager at Tekes. “Moreover, more than half of our exports consist of products where software has a crucial role. And it is these sectors where ITEA and ARTEMIS are important.”

While globalisation has inevitably affected Finland, it has also opened up major markets. “China is a huge opportunity for example with Nokia very active

there,” points out Sihto. “On the other hand, it has been necessary to move manufacturing and jobs outside the country.” But, while manufacturing may have reduced, the major Finnish companies are still growing and their R&D is carried out in Finland.



#### INTERNATIONALISING R&D

EUREKA played a key role in the internationalisation of Finnish R&D in the 1980s. While new European programmes took up the relay after Finland joined the EU in 1995, the emergence of EUREKA Clusters such as ITEA, CELTIC and CATRENE has tipped the balance back as their programmes match national priorities.

“We are active in a range of new instruments; and funding from the EU through the research Framework Programmes complements the Tekes offering,” adds Sihto. “The Framework Programme is particular useful as it can support organisations here – such as municipalities – that are not eligible for Tekes funding.” Tekes itself has a dominant role in supporting research for industry and engineering, which accounts for some two thirds of its funding; the other third is for applied research in universities. Basic research in Finland is funded through the Finnish Academy of Science.

“A major part of our funding goes to small and medium-sized enterprises (SMEs),” Sihto says. SMEs can obtain a higher percentage funding for research costs with less strict requirements than for large enterprises. Big companies also need to subcontract research to SMEs and research organisations to be eligible for funding by Tekes. So there is a strong focus on networking with SMEs as exemplified by participation in EUREKA Cluster projects.

More recently, Tekes has been very active in encouraging Finnish companies and other R&D players to find partners further afield. “We are actively seeking new platforms for R&D outside Europe,” say Sihto. Tekes has therefore established bilateral partnerships with the USA, for example organising a joint call with the National Science Foundation. And it has encouraged cooperation with both US and Asian universities.

#### STRATEGIC RESEARCH CENTRES

National research funding strategies have also been thoroughly reviewed in Finland in the last few years. A series of strategic centres for science, technology and innovation (SHOK) now promote industry-driven research programmes, complementary to Tekes. ICT is one of the six areas concerned through Tivit Oy – the others are health and wellbeing, metals and engineering, energy and the environment, building and forestry.

The new privately-owned centres are intended to encourage tighter and more focused cooperation between industry, research organisations and universities in a similar way to the competitiveness clusters found in France and other countries. Some 20% of Tekes funding is funnelled through these organisations.

#### MORE INFORMATION:

[www.tekes.fi](http://www.tekes.fi)



## Accessing research cooperation across Europe

Finnish security specialist F-Secure has developed into a major international organisation in the last 25 years, focusing on operator-provisioned software services. The company believes strongly in research cooperation. It was involved in the ITEA AGILE and FLEXI projects on agile software processes. It is currently participating in the ITEA 2 ATAC project on advanced test automation for software-intensive systems where it is providing an industrial case.

Helsinki-headquartered F-Secure has 18 country offices and a presence in more than 100 countries, with Security Lab operations in Helsinki and Malaysia. The company offers service-based core security and back-up products requiring continuous updating and support. Users pay monthly for example for anti-virus or anti-spam services. Research is essential, particularly on the process side using agile techniques to ensure faster delivery with high quality.

“Publically funded research is important to us,” says F-Secure director Jari Still. “ITEA offers many advantages as it enables broad cooperation with research organisations and industry; it has been our gateway to Europe. We also work through Finnish national programmes such as the Tivit Oy’s Cloud Software Programme which we are leading.”

The ICT industry is important in Finland, driven originally by Nokia, and with a lot of investment by the Finnish government. Research funding has been increased with several mid-sized companies now growing fast. “We have continuous discussions with the government on funding,” adds Still. “We get funding guidance from Tekes and we work closely with the public authorities once the projects are underway.”

Funding levels are also discussed regularly with views on how other countries see a project proposal and a focus on European level cooperation. So, F-Secure feels overall support in Finland is working pretty well.

#### MORE INFORMATION:

[www.f-secure.com](http://www.f-secure.com)



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# Tagging along with innovative new services

Finnish SME Bonwal is a spin-off from Scandinavian telecommunications service provider TeliaSonera, intended to exploit the wider perspectives of Near Field Communications (NFC) technology piloted in the ITEA SmartTouch project. This project won the ITEA Gold Achievement Award in 2009.

“Through SmartTouch we gained a lot of knowledge about how to apply NFC technology as well as access to a partner network offering strong relations with the bigger players and SMEs,” explains Jukka Suikkanen, CEO of Bonwal.

The new company is focusing on two areas:

1. Mobile pocket services offering an electronic wallet or purse on mobile devices. The services are sold to big companies and transport providers which offer them to customers in forms such as ticketing, promotional coupons or loyalty cards; and
2. Tag management with content management for the provision of touch-based services using NFC/2D tags which can be read by a mobile phone to activate an application or service. Typical uses include electronic voting, information and service requests.

These are fast-growing markets. Wallet services for example are being exploited by Google and Apple. “While we could compete, we are rather creating ‘branded’ services which can be sold to big companies to offer as their own brand,” says Suikkanen. The large companies provide services for consumers while Bonwal provides the technology.

Bonwal is also involved in an ITEA 2 project – Smart Urban Spaces (SUS) – which are continuing the SmartTouch work. “We are looking at the next phase – how to get services to production and how to commercialise them,” he says. SUS is developing innovative e-city services based on the latest mobile technologies with several pilots in Finland.

“Working in ITEA projects helps SMEs like us to obtain knowledge and access to networks not possible otherwise and through a single agreement,”

says Suikkanen. “We can access results from large research organisations such as VTT that we could not do by ourselves. Tekes also appreciates international networking and being a partner in a large consortium improves our possibilities for public funding.”

At the same time, Suikkanen believes strongly that small companies have much to offer in co-operative projects. “Small companies are flexible, more practical and do things faster. Decision making and processing is easy and all developers have the same tools in use – we can do in months what in a big company can take years.”

**MORE INFORMATION:**  
[www.bonwal.com](http://www.bonwal.com)

## GEODES - Power saving handbooks for wireless sensor networks



**GEODES**

Wireless sensor networks are increasingly in demand for a growing number of application domains including health, surveillance and protection, automotive, multimedia and defence. These highly mobile devices are hugely dependent on their capability to manage their limited battery capacities in order to reach a reasonable autonomy of the individual device. As a result, power optimisation is no longer confined to the scale of the device but should embrace its environment through the networks they access, and the development and efficient cooperation of specific design techniques. Embedded software and accompanying tools are mandatory to face the challenge of allowing long power autonomy.

The ITEA 2 GEODES project rises to this challenge by considering all systems levels and, notably, emphasising the distributed system view. Relying on thorough expertise from its consortium, consisting of enabling technology providers and end users supported by research centres, power consumption issues are investigated from a global and coherent point of view covering a large range of aspects such as power-aware protocols, power-aware operating systems, middleware developments which include quality of service (QoS) and systems-level modelling (SystemC) as well as issues for their efficient cooperation.

GEODES has already delivered significant technological achievements, including orders-of-magnitude energy savings and lifetime extensions which have been verified against multiple prototype

demonstrators across diverse application domains.

Two power saving handbooks written by project partners are now being promoted and are publically available. Part A: Power savings at Node level and Part B: Power savings at Network level both describe the best strategies of power optimisation for the embedded distributed systems as a result of GEODES project.

**MORE INFORMATION:**

<http://geodes.ict.tuwien.ac.at/PowerSavingHandbook/>

## Swedish modelling firm Modelon launches FMI Toolbox for MATLAB



During the last 18 months, the Functional Mock-up Interface (FMI) has established itself as a standard for exchange of dynamic models. Several modelling and simulation tools such as Dymola and SimulationX already support the new standard and more tools are following. The FMI standard has been developed in the ITEA 2 MODELISAR project.

Modelon, a partner in the ITEA 2 OPENPROD project, was one of the early adopters of FMI and has used its

position to develop a MATLAB toolbox – the FMI Toolbox – which makes integration of compiled FMI compliant models into the MATLAB/Simulink environment easy.

“We believe that this is a great opportunity to leverage our contributions to the OPENPROD project, especially since MATLAB is one of the major engineering platforms,” says Dr Hubertus Tummescheit, CEO of Modelon. “The FMI standard has become a major technology in the last year and we will definitely continue to invest in it.” Modelon is currently contributing to the next version of the FMI standard and is collaborating with MODELISAR partners as part of Modelon’s engagement in OPENPROD.

In addition to the FMI Toolbox, Modelon is launching Modelica Workshop, a Modelica-compliant environment supporting export of compiled FMI models. The combination of these tools provides a complement for MATLAB users that enables them to use the powerful Modelica language easily for physical modelling.

**LINKS:**

- [www.modelica.org](http://www.modelica.org)
- [www.functional-mockup-interface.org/index.html](http://www.functional-mockup-interface.org/index.html)
- [www.modelon.com/products/fmi-toolbox-for-matlab](http://www.modelon.com/products/fmi-toolbox-for-matlab)
- [www.modelon.com/products/modelica-workshop-for-physical-modeling](http://www.modelon.com/products/modelica-workshop-for-physical-modeling)

# News

## Turkcell Technology joins the ITEA 2 Board

In May, the ITEA 2 Board has unanimously welcomed Turkcell Technology, as a new member. This membership will help to strengthen the ITEA 2 programme further and, at the same time, give Turkcell Technology the opportunity to play a significant role in the European industry-driven research & development (R&D) landscape. Turkcell Technology is the R&D branch of Turkcell, which is the leading communications and technology company in Turkey and the third largest GSM operator in Europe in terms of the number of subscribers.



Rudolf Haggemüller, Chairman of the ITEA 2 Board stated: "We are delighted to welcome Turkcell Technology to the ITEA 2 Board. Turkey and Turkcell Technology have been strong participants in ITEA for many years now. Turkcell Technology has been involved in ITEA 2

since our third Call (2008) and has been one of the largest Turkish partners participating in seven projects. Turkcell Technology, as one of the leading Turkish R&D and innovation companies, can play an important role in further strengthening ITEA 2's position and its focus on innovation, business impact and fast exploitation."

Turkcell Technology Chief Executive Officer Semih Incedayi commented: "We believe that being unanimously elected to ITEA 2's Board of Directors, thanks to Turkcell Technology's track record of success and efficient participation in previous projects, and its technology knowhow, is invaluable for both our company and the country. It is essential for Turkcell Technology to play a decision-making role together with Europe's leading companies in the R&D arena. Turkcell Technology considers ITEA 2 Board membership to be a significant role undertaken on



behalf of Turkey itself. This membership provides us with a fresh channel for new experiences enabling us to expand our country's frontiers, while enabling us to carry out Turkey's strategic priorities at this focused platform. We will thoroughly support the promising projects of Turkish companies."

For the full press release, go to: [www.itea2.org/press\\_releases](http://www.itea2.org/press_releases)



ITEA 2 PO  
Preparation Days  
2012  
1-2 February

# Save the date

Join us at the event that will give you the excellent opportunity to launch your PO preparation!

More detailed information will follow after the Co-summit 2011 keep an eye on [www.itea2.org](http://www.itea2.org)

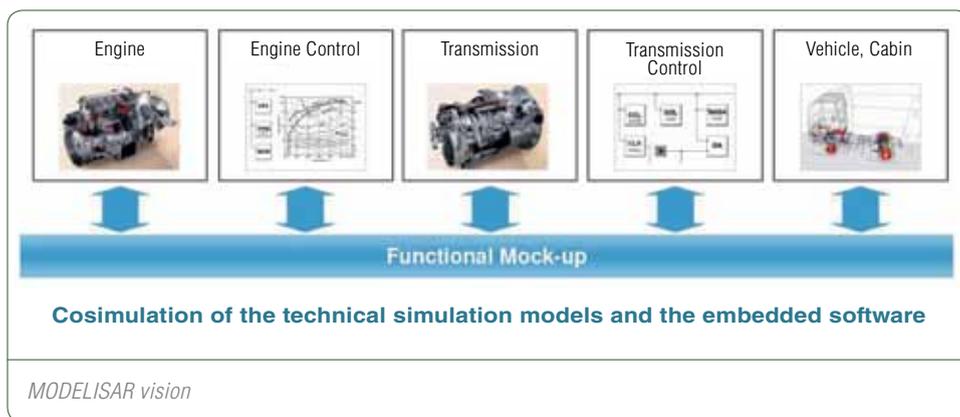


# Defining and validating physical systems in a virtual world

Modelling offers a major advantage in that it is possible to make an early definition and validation of systems behaviour without having to construct prototypes of real components. Making a digital rather than a physical validation saves time – and design faults can be identified earlier. Two current ITEA projects show the advantage of developing standardised approaches to such efforts in the automotive world and more generally in user interfaces.

# Functional Mock-up Interface enables multi disciplinary interoperability

The ITEA 2 MODELISAR project has developed a Functional Mock-up Interface (FMI) for the tool-independent exchange and run-time interoperability of simulation models in embedded software design. The system has been demonstrated in a range of automotive applications and the specifications for open simulation already published. An organisation is now being established to continue support for the automotive sector while encouraging use in other areas.



Modelling is not new in automotive systems development but enabling interoperability between different subsystem components from various disciplines has always been a challenge for the engineers. The intention of MODELISAR is to allow early virtual testing, collaborative simulation and integrated Product Lifecycle Management (PLM) design for a faster and more efficient development of the embedded software in vehicles. While the emphasis has been on systems modelling with for example Modelica and AUTOSAR for such software, the approach is equally applicable to other languages, tools and domains.

## DEFINING PHYSICAL BEHAVIOUR

“The value of modelling is that it early defines the physical behaviour of the system to be designed as well as of the parts around it early,” explains MODELISAR project leader Patrick Chombart of Dassault Systèmes. “For example you cannot define

the car alone but need also models of the road, driver behaviour or weather conditions. Globally speaking, models enable the definition of an abstraction of reality to design the physical behaviour of these subsystems.” Digital validation thus saves time & money, due to prototypes costs and availability.

However, the car itself involves many different disciplines. For example, when working on the electrical part of a car, it is necessary to take into account the battery set, power source, possibly comfort facilities requiring electricity and the energy distribution system. It is also necessary to model complementary parts of the vehicle to have all relevant behaviour for programming an electronic control unit (ECU).

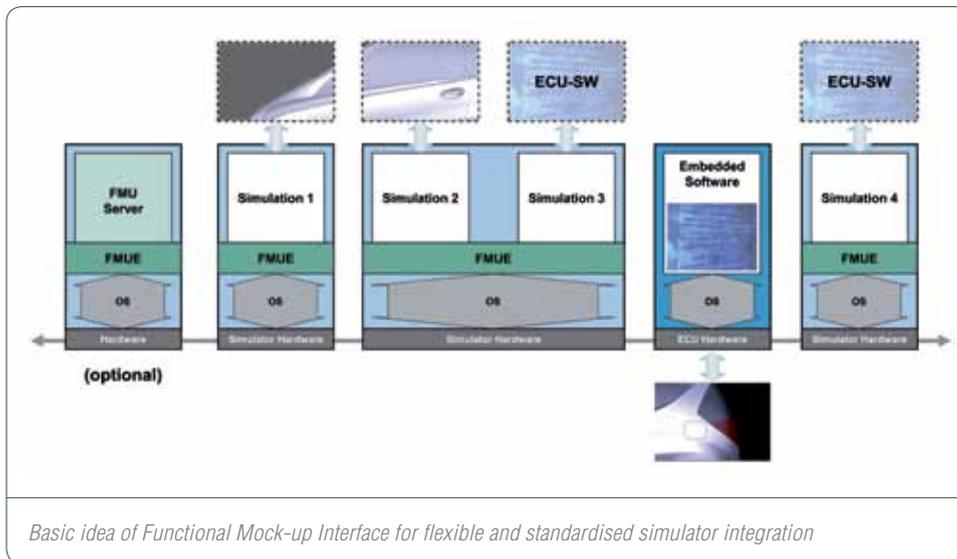
While modelling itself is not new, people have tended to work in their own particular disciplines – such as engines, mechanics or body systems –

with specific approaches and tools. The problem is to co-operate between the disciplines. MODELISAR set out to facilitate interoperability between the various ‘segments’, allowing each group to work on its specific model and embedded software while co-operating in a global and flexible system simulation. “Our key innovation has been the definition of advanced runtime interoperability interfaces – called Functional Mock-up Interfaces (FMIs) – with the elaboration of a set of specifications for these FMIs,” says P. Chombart. Numerous prototypes were developed, supported by tool vendors and research centres. These are now being applied to a series of automotive use cases to show the value of this approach.

## TOOL- AND VENDOR-INDEPENDENT STANDARD

The FMI is designed as an open, general tool- and vendor-independent standard in systems simulation. FMI specifications have already been published under open copyleft license conditions on the MODELISAR website. The FMI enables run-time co-simulation between virtual product models, especially in the Modelica modelling language, and executable embedded software using AUTOSAR automotive software architecture, under various configurations. This means that different disciplines can now work on their models with their own software and tools as they did before, while the FMIs offer standardised Application Programming Interfaces (APIs) into the software world. “We can therefore offer USB-like plug and play of the components in a simulation framework – this is the real big added-value,” insists P. Chombart.

MODELISAR has developed a set of 25 use cases to demonstrate FMIs in different areas such as engine combustion, mechatronic control of the gearbox, climate control and virtual reality support, embedded software code generation, test and calibration, and finally management of the simulation components and related data, to help people designing their



– while IPR is kept protected as the system behaviour itself is delivered as a 'black box' component with FMI interfaces.

Tool vendors can also compete with FMI-compatible tools while offering their own value-added services. A group of vendors within the MODELISAR consortium made prototype tools which have been used in the 25 use cases. The specifications are today available to any research institute or vendor willing to propose their engineering toolset with the FMI compatibility. This is already happening with 30 FMI implementations in modelling/code generation/simulation tools planned or available – 50% by project participants and 50% from outside the consortium.

#### DISSEMINATING TO A WIDER COMMUNITY

Consortium members are now looking beyond the MODELISAR project. "We are now mature and confident enough to discuss how to build an organisation to maintain and disseminate the FMI, also beyond the automotive domain," says P. Chombart. "We hope to have a formal agreement by the entire consortium in October and all the necessary rules in place by the end of the year for operation by beginning of 2012."

#### MORE INFORMATION:

[http://en.wikipedia.org/wiki/Functional\\_Mock-up\\_Interface](http://en.wikipedia.org/wiki/Functional_Mock-up_Interface)

applications in industrial projects. These show not only innovation interoperability between models and embedded software but also that this approach is of real value in industry where people are working to define their products in a PLM approach.

"We are able to handle all data related to the definition of products," adds P. Chombart. "This means we can support traceability from the vehicle requirements, models and their evaluation, and data related to the embedded software."

For instance, a demonstrator at the end of the project will show the workflow of activities with contributions by different disciplines – project manager, specialists

in controller software, specialists in thermal systems and so on. This will show that FMIs can also be included in projects at original equipment manufacturers (OEMs) and their subcontractors.

Carmakers such as Daimler, Volkswagen and Volvo see major advantages with this model-based approach in vehicles electric board projects as it is easier to integrate FMI-compatible components and build the configurations they want to simulate and tune/debug. Electronic specialists can co-operate more easily with hydraulic specialists for example, thanks to FMI-based models exchange. And OEMs can also co-operate with suppliers more easily as they can specify their needs and request the FMI compatibility

## MODELISAR

ITEA 2 07006



**Patrick Chombart**  
Project leader  
Dassault Systèmes

#### Partners

Altran  
ARMINES  
AIT  
ATB  
Atego Systems  
AVL List  
Daimler  
Dassault Systèmes  
Dassault Systèmes AB  
David  
Deutsches Zentrum für Luft-  
und Raumfahrt (DLR)  
Fraunhofer FIRST  
Fraunhofer IIS EAS  
Fraunhofer SCAI  
Geensoft

IFP Energies Nouvelles  
INSPIRE  
ITI  
LMS Imagine  
LMS International  
Martin Luther - University of Halle  
QTronic  
Simpack  
Trialog  
Triphase  
TWT  
Verhaert  
Volkswagen  
Volvo Technology Corporation

**Countries involved**  
Austria

Belgium  
France  
Germany  
Sweden

**Project start**  
July 2008

**Project end**  
December 2011

**Website**  
[www.modelisar.com](http://www.modelisar.com)

**Contact**  
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# Speeding development of user interfaces

While many aspects of information and communications technology (ICT) systems design are now standardised, developing user interfaces is often not considered a priority with little time or budget dedicated to this area. The ITEA 2 UsiXML project focuses on defining, validating and standardising a user-interface description language with versatile context-driven capabilities. Its model-based approach is based on the ‘ $\mu 7$ ’ concept of multiple device, user, culture/language, organisation, context, modality and platform applications.

The most common method of developing user interfaces consists of a ‘rush-to-code’ approach, where the developer rushes to the keyboard to program the user interface by hand, resulting in difficult-to-use systems. UsiXML set out to develop standardisation in interface design to lower total application costs, reduce development time and improve user-interface capabilities with new modalities, user-aware interfaces, etc. The approach is currently under consideration for standardisation by the World Wide Web Consortium (W3C) in the context of the Charter Group on Model-Based User Interfaces.

The new approach benefits both end users who will gain higher quality and easier-to-use systems, and designers and developers who will gain real tool software for modelling using a structured, stepwise methodology including testing to reduce time to market and improve the matching between user requirements and the final user interface.

Such an approach has been found in various niche areas before but is now being made available more widely. It involves:

1. Modelling the end user’s task;
2. Deriving an abstract user interface – that is independent of any interaction modality and computing platforms; and
3. Tailoring the interface to the interaction modality and computing platform – desktop machine, phone, kiosk... This could involve adapting a web view to the tactile screen in a kiosk. This is why the consortium also involves some hardware vendors like See & Touch.



Modelling makes it more rigorous to capture the user interface independent of technology and then develop code. “For example, if you change the model, you change the interface accordingly rather than having to tweak code,” explains scientific project leader Professor Jean Vanderdonck at Université catholique de Louvain (UCL) in Belgium. He sees this as the next step in the development of programming from assembly language, through programming and then high level programming languages to this model-based approach.

As more and more companies are investing in a model-based approach for system design, the UsiXML language will, in the future, be integrated in such methodologies to help them model the system and the user interface in one global step.

#### CONSENSUS APPROACH TAKEN

UsiXML is an ambitious project. “As standards are the main goal, we needed a large consortium to gain consensus,” adds Professor Vanderdonck. “It took a lot of time to get this consensus but this resulted in a stronger solution validated by all partners in seven countries.”

The work started in 2003 in the context of the FP5 Cameleon project which was aimed at multi-target user interfaces. Initially, an already existing User Interface Description Language (UIDL) was used. Reviewers encouraged the consortium to define a new one that is more expressive, open, and free-to-use. Research and development activities were then supported by FP6 Similar, FP7 Human, FP7 Selfman, DG06 Salamandre. Finally, ITEA 2 enabled the involvement of many companies important to obtain critical mass – not really possible in FP7.

Work is now well advanced with UsiXML 2.0 probably ready for release before the end of the year – it involved voting by every partner across the seven countries. Moreover, participation in the W3C charter group required two different implementations from two different companies and two different sectors – the ITEA 2 project offered more.

## UsiXML

ITEA 2 08026



**David Faure**  
*Project leader,*  
*Thales*



**Jean Vanderdonck**  
*Scientific Leader,*  
*Université Catholique de*  
*Louvain*

### Partners

Aérodrones  
Agence Wallonne des  
Télécommunications  
Baum Engineering  
Bilbomatica  
DAI-Labor  
DefiMedia  
Institut Télécom  
Institutul National de Cercetare-Dezvoltare in Informatica  
Namahn  
ProDevelop  
PYAutomation  
See & Touch  
SymbialT  
Thales  
Universidad de Castilla-La Mancha  
Universidade da Madeira  
Universidad de Valencia  
Université Catholique de Louvain  
Université Joseph Fourier  
Université de Namur  
Université Pierre et Marie Curie  
Université de Technologie de Troyes  
University of Rostock

Vector Software Factory  
W4

### Countries involved

Belgium  
France  
Germany  
Greece  
Portugal  
Romania  
Spain

### Project start

October 2009

### Project end

September 2012

### Website

UsiXML Language website:  
<http://usixml.org>

UsiXML Project website:  
<http://www.usixml.eu>

“We developed implementation based on ‘frozen’ layers,” says Professor Vanderdonck. The language enables sketching for form building for example. And it does not need code as the work is carried out at model level. For example in a context-aware application, it is possible to adapt the presentation of weather forecasts that take into account where someone is, wind speeds and sun for presentation on PCs, smart phones and even low battery phones. The presentation can change according to the end user’s interest (e.g., meteorology or sport), location (e.g., close to the sea or the mountains), and platform (e.g., optimisation of information depending on screen resolution and interaction modality).

### EARLY COMMERCIALISATION ENVISAGED

Early commercialisation of results is already envisaged. The first generation of results will be available in autumn 2011. A UsiXML End-User Club has been launched with a conference organised in the first week of September in Lisbon with a series of demonstrations. The approach was shown at the ITEA Co-summit in Ghent in 2010 and at the 2010 EU ICT

forum. The last official update of the project results will be 2012.

Results are being applied internally by one project partner in a web application called ‘Walkaware’ – developed by Defimedia – which makes it possible to create tourist routes with added points of interest in multimedia form – photos, videos, sound recordings, etc. These routes can be published on websites, accessed through tourism kiosks and downloaded to GPS devices and smart phones. Modelling was used to adapt resolution and size using models while it is also possible to combine routes with weather forecasts.

Research engineers at the Telecom Bretagne engineering school in France developed a validator and demonstrator for UsiXML involving the European Maritime Surveillance Framework. This integrates a host of autonomous surveillance applications, tactile surfaces and sensor systems – including maritime search and rescue, traffic monitoring, fishing inspections and maritime boarder surveillance – to ensure safety.

“I believe our language has reasonable chances to be adopted as it covers more applications from web to real industrial applications,” insists Professor Vanderdonck. “It also captures different user needs such as preferences, platform and level of disability – visual, motor, cognitive...” As a result, it covers a wide range of users and is probably the most expressive language available today. It is only necessary to specify just what is required, not all aspects of all models need to be realised, which makes the language scalable.

### HIGHER PRODUCTIVITY POSSIBLE

The modelling approach adopted offers major benefits to both users and industry. These include the availability of new systems optimised for the context of use – such as easy adaptation of a view to a personal device – and a shorter time to market while boosting productivity.

# Systematic Paris-Region: a strategy combining innovation and business development



Created in 2005, the French Systematic Paris-Region competitiveness cluster brings together 600 key players from the Paris region active in the field of software-intensive systems and addressing markets with major economic and social challenges.

Systematic Paris-Region activities are centered on three strategic missions:

1. Fostering innovation through collaborative R&D; and
2. Supporting the growth of its small and medium-sized enterprise (SME) members; and
3. European and international development.

## INNOVATION ACTIVITIES

Systematic innovation activities are conducted by five thematic Working Groups, each sharing a strategic vision and developing collaborative R&D projects in its domain:

1. Automotive & transportation;
2. Digital trust & security;
3. Systems design & development tools;
4. Telecommunications; and
5. Open-source software.

A sixth Working Group, dedicated to smart energy, will be created at the end of 2011.

An important aspect of the roadmapping activities of Systematic is that they address generic needs as well as domain-specific requirements – automotive, security and energy management. They thus contribute to the creation of strong and well-aligned ecosystems of companies in these domains.

To date, Systematic has developed 258 research and development (R&D) projects representing a total R&D investment of €1.2 billion including €450 million

funded by the French government, by its economic development and research agencies and by the local authorities. Some 80% of the 300 SME members of Systematic are directly involved in the R&D projects. They have received more than 30% of the public funding.

Innovation activities are carefully managed by the governance of Systematic. Project proposals are first evaluated by the thematic Working Groups. They are then presented to the Board of Directors which attributes to the selected proposals the 'Systematic Label'. This label is mandatory for a project to obtain funding from the French government. The 'filtering ratio' from first proposals to proposals with the Systematic Label is of the order of 35%.

Systematic R&D projects include proposals to national as well as multinational calls such as EUREKA. Six ITEA 2 projects proposed by Systematic members have received the Systematic Label and have been funded by the French government: EASI-CLOUDS, DIAMONDS, HiPPiP, MODELISAR, RECONSURVE and Role-ID.

## SME GROWTH: "PLAN AMBITION PME"

Support for the development of SME members is carried out through a dedicated programme called PLAN AMBITION PME. It offers five different lines of services to SMEs, covering business development, international development, innovation, funding and human resources.

Some 500 SMEs operating in the systems and software sectors have benefited from this action plan. Results achieved throughout the plan include:

- More than 230 dedicated actions conducted to support their development;
- 11 new SME offices opened in the USA or China; and
- 12 SMEs funded by business angels and venture capital.

## INTERNATIONAL DEVELOPMENT

Accredited as a world-class cluster by the French government, Systematic development on the European and international scene follows two priorities, to:

1. Be an active player in European innovation programmes; and
2. Support the international development of its members, especially SMEs and public research organisations.

In addition to growing involvement in ITEA 2 programme, Systematic favours linking with European regional clusters such as SafeTRANS and BICC-Net (Germany), Point-One (Netherlands), SITC (UK), DSP Valley (Belgium) as a way to build sustainable partnerships.

Systematic is member of the European Security Innovation Network SIGNATURE, funded by the INTERREG IVB NWE programme and of the ICT Labs funded by the European Institute of Innovation and Technology (EIT).

At the international level, Systematic Paris-Region has opened offices in two key regions: North-America (Boston, USA) and Asia (Beijing, China). The aim is to:

- Promote the Paris Region and its members;
- Facilitate international partnership projects; and
- Support SME export activities.

## KEY PARTNERSHIP

Because of similar visions in terms of technologies and markets, Systematic sees ITEA 2 as a key partner for its development in Europe. The reinforcing of this alliance is part of Systematic's strategic plan 2012 to 2015.

## MORE INFORMATION:

[www.systematic-paris-region.org](http://www.systematic-paris-region.org)

# More than just a formality

It was the formality of computer science that first attracted Olle Olsson, a senior researcher at the Swedish Institute of Computer Science (SICS) and a long time collaborator and leader in ITEA and ITEA 2 projects. His career has covered research and development on knowledge-based expert systems, agent technology and now distributed systems. He advises on the use of the web in e-government and also manages the Swedish W3C Office. He believes strongly in the industrial application of technological research and is proud of Sweden's contributions.

Olle studied mathematics and logic at Uppsala University – the oldest in Sweden. Here he was intrigued by the interesting relationship between the formal aspects of these subjects and those which have to be tackled in computer science. "Programming is about devising formal representations and this was a nice way of piggybacking on my studies in maths and logic," he says.

He graduated in computer science and joined a company involved with database engines just as the SQL database concept was being publicised. "SQL was not yet a standard but was offered as a better way of doing databases," he recalls. "My company, based in Sweden, wanted to position itself as a provider of this kind of engine. So I was involved in that technology development."

After that experience, he changed focus and joined a defence electronics company in Sweden where he got involved in systems development methodology and tools. The company built big systems with interesting requirements in terms of reliability, robustness and performance. It needed high quality methodology and tools; Olsson was involved in refining what the company had in these areas.

However, his real interest lay in more research-oriented work. "Even if a company is involved in information technology and is trying to be at the forefront of technology development, it seldom has the resources to invest in more speculative research." So he left industry and joined SICS in 1990. This is a national research institute for information and communications technology. It is a non-profit organisation offering a competence resource for Swedish industry and society at large.



SICS does its R&D in collaborative projects sponsored either by national funding schemes or at European level. It also works on a bilateral base with industrial companies in Sweden which want to harness the Institute's knowledge and expertise to enhance a company's products or methodology.

"SICS has provided me with a very interesting context where it is possible to address breakthroughs in technology but at the same time to have a good relationship with industrial reality – because that is where results are intended to go," he insists.

Olsson has been involved in a number of European projects in different contexts from his first day at SICS, mainly in the EU Framework Programmes and within ITEA. He has found this exciting because such projects often involve networks of new types of partners and

new roles in the IT ecosystem. "It has been a good learning experience, broadening and deepening my understanding of where this field is going," he says.

Olsson also finds it interesting that he has been active in this area for such a long time that he has seen the different generations of information technology pass by – from the era of big computer centres, then minicomputers, personal computers and now phones and iPads. "We have gone from high level big investment to something which is more or less a commodity – that is radical change for a technology in such a short time," he adds.

He is proud of Swedish success. While originally there was some expectation that Sweden would be able to compete in off-the-shelf commodity software and hardware, this has mainly come from the USA, he points out. Sweden has looked rather at how to exploit the technology. For example, the telecommunications industry has turned from doing things in a proprietary way to buying in the chips, operating systems and support and then building on top of all this. Similarly the automotive industry now creates systems based on components from elsewhere.

"There are some developments specific to Sweden such as Skype – one of the two guys that started it was from Sweden. MySQL was also created in Sweden but bought by Sun Microsystems and is now part of Oracle. We have good skills here in Sweden and good competences in terms of technologies but it is difficult to build companies as we only have a small home market.

On a more personal level, Olle has developed a strong interest in woodwork and now builds toys for his grandchildren. "It is a way of contrast with the office where my head is active and with home where my hands are active."

**Innovation Reports**

**ITEI**

(ITEA 2 ~ 07003)

Ensuring a systematic approach to software innovation

**METAVEVERSE1**

(ITEA 2 ~ 07016)

Bringing reality to virtual worlds

**ITEI**

(ITEA 2 – 07003)

José A. Heredia Alvaro, Jaume I University  
Spain

# Ensuring a systematic approach to software innovation

The ITEA 2 ITEI project set out to improve the approach of software and software-intensive industries to innovation through integration of a wide range of existing processes into a coherent framework. A series of new tools was developed to provide a more systematic approach to software innovation with better quality and shorter lead times. Results were demonstrated in 22 cases in a range of different industrial environments. The outcomes have been brought together in a book on the art of software innovation published in August 2011 and the SinnoBoK community has been established to disseminate the ideas more widely.

Software is increasingly being used as an instrument for product innovation and has become a major driver. However many different methods and approaches existed for software innovation and a new body of knowledge was required to understand how to innovate in and with software. There was therefore a strong need to integrate the many different processes into a new overall approach offering a framework to guide innovation processes in companies.

This idea was presented at the ITEA 2 project proposal meeting in Düsseldorf in 2007, where it attracted interest from research organisations and both large and small companies. ITEA 2 was seen as important as it made it possible to involve many industries concerned about innovation and to obtain backing from a sufficient

number of companies and countries to help establish the new framework.

The resulting project involved 29 partners from three different countries and included large and small software developers, research organisations and universities, and industrial users of software – so covering the whole IT supply chain from basic research to end users.

**INTEGRATING THE FOUR Ps**

The hypothesis was that better integration of the four ‘P’s – product innovation, project, process and performance – complemented by new emerging and promising innovation techniques such as Web 2.0, open innovation and communities would lead to more successful innovations in software-intensive product development.

ITEI’s innovative approach lay in the fact that the focus was not merely on extending the state of the art in software product development but rather on researching solutions and developing a framework to assist companies in all aspects of decision making – such as deciding what to select from the state of the art, how to combine and integrate methods, tools and techniques, and tailoring towards their specific context. The result is improved management of company-specific innovation strategies.

All this involved:

- Assisting in selection and tailoring of the most appropriate innovation strategy depending on context with an approach that allows individual organisations to define or select a suitable strategy

taking into account parameters such as type of innovation, partnership models, product complexity, available expertise and degree of maturity;

- Allowing better management of the execution of innovation projects in a swiftly changing development environment, monitoring and updating project status and progress, and obtaining the knowledge necessary for fast response and decision making on performance and business goals;
- Helping to understand new business opportunities offered by open innovation and Web 2.0 technologies;
- Including appropriate facilities, support and tools for product innovation, innovative project management and continuous improvement of company-specific development environments; and
- Deploying an open innovation portal for product innovation and innovative software development that goes beyond the duration of ITEI. This website ([www.sinnobok.org](http://www.sinnobok.org)) offers a body of knowledge called SInnoBoK – the software innovation body of knowledge – which will be used for dissemination towards the broader industry. In its current form, it consists of a series of practice areas which a software-intensive product builder needs to master to be successful with its software innovations.

ITEI identified 46 activities to manage innovation. These are grouped into eight practice areas covering the art of idea valuation, focusing, openness, optimising the impact of critical experts, innovation stimulation, idea harvesting, idea incubation and crafting smart products that companies need to master to improve how they innovate.

This framework and the description of these activities and practice areas have been collected in a book *The art of software innovation* published in August 2011 by Springer. This explains the framework and shows how it has been applied in the 22 industrial cases developed by the project partners.

#### SEVEN NEW TOOLS

In addition to the overall integrated approach, ITEI partners developed seven new tools to support the approach, some of which are already being commercialised. These tools either support different aspects of innovation, such as advancing idea management, or take a more comprehensive approach to cover all the innovation processes: company strategy, managing all the people involved in innovation and commercialisation.

Concrete examples of the ITEA 2 project's success include:



- The AuraPortal web-based innovation process management system which is a software platform offering in one package business process management, intranet/extranet web portals and content management among other enterprise-essential applications, which are fully integrated in the same environment in a seamless way. This system is already being offered to all Spanish-speaking countries and will be sold in other countries such as the USA and China.
- The Inno-W Innovation Hub system which provides a single navigation point for data related to innovation management. It combines four strategic integrated processes:
  1. Collaborative innovation process management;
  2. Idea and opportunity management;
  3. Project management; and
  4. Portfolio management.
 It is already being exploited in Finland by several new public-private partnerships to speed up innovation processes. Their main goal is to renew industry clusters thoroughly and create radical innovations. Innovation Hub is used by the all main enterprises, universities and research organisations in the Finnish Forest Cluster, the FIMECC metal- and engineering cluster, the CLEEN energy- and environment cluster and the SalWe health- and well-being cluster.
- The Indie Group CogniStreamer collaborative tool which supports network-centric innovation based on Web 2.0 social software tools and technology. This is already being adopted in Belgium and in

central Europe. It provides a platform for scaling and amplifying connections and tapping into the knowledge flows within a company's ecosystem.

#### IMPROVING THE WAY COMPANIES INNOVATE

It is not possible to put figures on the success of the project as the results are intangible. The purpose was to improve the way companies innovate – helping them to be better at developing new products, speeding introduction of new products in the market, being more efficient in managing their ideas and reducing lead times for innovation while achieving more systematic innovation.

Many companies focus on developing actual products. The idea here was not only to improve products but also processes to develop other products, extend company portfolios, change business models and how to change/make strategic decisions as a company. As a result, businesses now have the opportunities to learn and communicate ideas to become better at innovation.

It is important for European companies to adopt these insights to have a real impact. ITEI partners are already transferring their knowledge to other companies through training, presentations and webinars. Moreover, while the focus of this ITEA 2 project was on software, the partners are now thinking how to extend this approach to other industrial sectors including services. And the tools developed are already being used in other sectors.

#### MORE INFORMATION:

[www.itei-itea2.org](http://www.itei-itea2.org)  
[www.sinnobok.org](http://www.sinnobok.org)

## METAVVERSE1

(ITEA 2 07016)

Jean Gelissen, Philips Research  
The Netherlands

# Bringing reality to virtual worlds

The ITEA 2 Metaverse1 project has developed a standardised global framework enabling interoperability between virtual worlds such as Second Life, IMVU, OpenSim, Active Worlds and Google Earth and with the real world in terms of sensors and actuators, vision and rendering systems, and applications in areas like social and welfare systems, banking, insurance, tourism and real estate. Results of the project drove the MPEG-V virtual worlds standard published by ISO/IEC in January 2011.

Virtual worlds integrate existing and emerging media technologies which can support networked services and drive the development of new kinds of devices and applications. The emergence of virtual worlds as a platform for networked services is seen as an important enabler as it offers the power to reshape the way businesses and people interact with their environments.

Such virtual worlds are found increasingly in areas such as serious computer games and simulation models. However they are mostly stand alone and independent of each other with little or no connection to the real world. As such, they are isolated solutions with a life of their own. Metaverse1 set out to overcome this isolation – defining a standard to enable connectivity and interoperability between virtual worlds and with the real world.

### CONNECTING WORLDS

The objective of the ITEA 2 project was to define interoperability in such a way that it would be possible to exchange information between virtual worlds. For example personalisation of an avatar in one virtual world could be applied to an avatar in another world. This would be useful for example in translating social skills to supply feedback to users established in one coaching system to another virtual world for a similar application. It would make it possible to transfer all

sorts of things that have been added in one world to another.

Even more important and needed from an industrial point of view is the development of a standard interface between the real physical world and the virtual – simulation/serious games – world. This would make it possible to attach real world sensors – such as body parameter or environmental sensors – to provide input to simulations or alternatively obtain feedback from such models into the real world, for example to control comfort conditions in terms of lighting, temperature or ventilation in a room or for personal wellbeing or drive robotic aids for disabled persons.

Another example is the use of 2D digital (video) sources as input for 3D worlds. A lot of what is done today is already available in some kind of IT system. So a standard interface would make it easy to obtain input from all types of existing systems – such as traffic reports, weather forecasts, property details or tourist information – for a virtual world representation or simulation.

### DIVERSE CONSORTIUM

Israeli professor Yesha Sivan, head of the information systems programme at the Tel Aviv Academic College, brought the idea of standardisation in the field of virtual worlds to the ITEA 2 project outline event

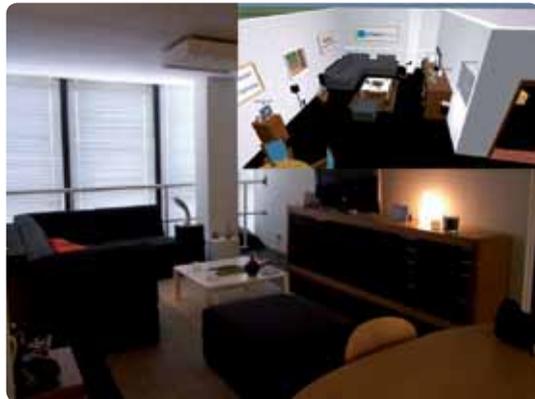
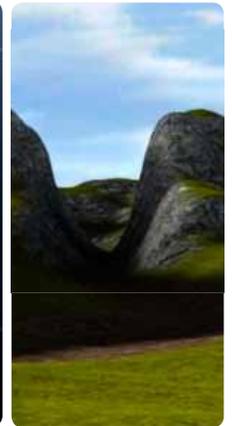
in Düsseldorf in 2007. Jean Gelissen from Philips Research teamed up with Sivan and took on the role of project leader.

Consortium members came from a range of different areas. Spanish partners focused on tourism and virtual travel applications. French partners were interested in technology simulation for museums, with a model allowing people to be present virtually in the space station and experience effects of low gravity. Dutch partners were more focused on ambient assisted living for elderly people – including connectivity with carers.

Finally, Alcatel Lucent in Belgium and France was interested in the symbiosis between video conference and meetings in a virtual world. Video conferencing has limitations – particularly in being static. Meetings in a virtual world can be much more dynamic. People can move around, change seats and participate in subgroups in a virtual world, but there is still a lack of reality – it is not possible to see facial expressions for example. So the idea was to combine the two approaches by projecting 3D footage of participants on their avatars in the virtual world – offering a new way of teleconferencing.

Many of the technologies required by Metaverse1 were not new but it was necessary to identify what was missing and develop suitable solutions. The project therefore defined a series of use cases and looked what was available in terms of virtual worlds and the very limited connectivity with the real world – mainly through display screen, keyboard and mouse.

Some 18 missing items were defined and the necessary technologies developed. Missing items, for instance, included:



- Being able to transfer data and actions between systems in terms of available sensor signals to avoid clicking a mouse and keying in information;
- Feeding real-time 3D video streams into a virtual world;
- Providing support for multiple languages – crucial in social contexts; and
- Support for inclusion of real audio input – for example taking original sounds such as fountains or on the beach at locations in Gran Canaria and integrating them into a virtual tourism application.

#### INTERNATIONAL STANDARD

The project's key intention was to develop an international standard within the well-known ISO/IEC Moving Picture Experts Group (MPEG). A new standard was completed within the timeframe of the project including an international workshop around the standard held in Korea in January 2011.

The first version of the ISO/IEC 23005-1:2010 (MPEG-V, Media context and control) standard is made up of several parts referring to:

- Architecture and use case scenarios;
- Metadata to describe device capabilities, sensor and actuator data and user preferences;
- Metadata to represent sensory effects;

- Metadata to represent virtual-object and avatar characteristics; and
- Syntax and semantics for all the above data formats and reference software.

MPEG-V took into account all sorts of products already on the market that could be adapted to the standard. This included amBX, originally developed by Philips, which is a system allowing the addition of extensions to multimedia and computer games. amBX makes it possible for example to add thunderstorm effects to games or films and is used in the Korean RoSE system to automate special effects for stage performances. Other applications studied in Metaverse1 for instance included the use of sensors for ambient-assisted living.

In the standardisation context, work is already advancing on a second version of the standard to extend its application domains. There is a lot of interest in biosensors – measuring vital body parameters and using them as inputs either for games or lifestyle-related applications.

#### VALUE IN APPLICATIONS

MPEG-V defines the boundary conditions but the real added value is in the applications – transforming

raw data into something useful. This is of interest to consumers, industry and even public authorities.

For example, local government in the Netherlands is interested in simulation models to help in urban redevelopment projects: currently, the public is invited to look at plans or a model in the town hall and give their opinion but this does not work well. Virtual worlds allow viewing from any angle or place – from where people live for example. So, when developing a new shopping centre, sports facility or apartment building, planning authorities can demonstrate the impact more directly.

Such a scheme was tried out in the Netherlands and a second version has been used to help students to find preferred accommodation. A similar approach can be used for all types of other urban planning – from modelling utility systems for maintenance or extension to locating new transport systems.

In addition, the virtual tourism, sensor-enabled ambient-assisted living and new generation teleconferencing systems mentioned earlier are application domains which have generated new business concepts.

**MORE INFORMATION:**  
www.metaverse1.org

CALENDAR

8-13 SEPTEMBER

**IBC2011**

AMSTERDAM, THE NETHERLANDS

During the IBC2011 different activities around the ITEA 2 project JEDI will be presented:

1. The paper entitled "Second generation of 3DTV: Are we ready?" written by Hispasat, a study of advanced coding techniques for developing future 3DTV service compatible systems and higher quality 3DTV.
2. A demonstrator of the JEDI satellite channel, transmitted since May 2011 through the Hispasat 1E satellite. This channel is the first to include 3DTV phase 1 signalling (standardised by the DVB-3DTV bluebook released in February 2011). This is one of JEDI's main outcomes, being proposed to the DVB-3DTV TM & CM subgroups for use in DVB-3DTV Phase 2 specifications.

[www.ibc.org / www.jedi-itea2.org](http://www.ibc.org / www.jedi-itea2.org)

27-29 SEPTEMBER

**NEM SUMMIT 2011**

TORINO, ITALY

[www.nem-summit.eu](http://www.nem-summit.eu)

28-29 SEPTEMBER

**HIGH-TECH PRODUCT LINES 2011**

VELDHOVEN, THE NETHERLANDS

Frank van der Linden, project leader of ITEA projects ESAPS, CAFE and FAMILIES is one of the invited speakers at the conference.

[www.bits-chips.nl/events/eventshpl.html](http://www.bits-chips.nl/events/eventshpl.html)

5-6 OCTOBER

**SYMTAVISION NEWSCONFERENCE ON TIMING ANALYSIS**

BRAUNSCHWEIG, GERMANY

Stefan Kuntz from the ITEA 2 project Timmo-2-Use is one of the speakers at the event.

[www.symtavision.com/newsconference2011.html](http://www.symtavision.com/newsconference2011.html)

10-13 OCTOBER

**EUROPEAN INNOVATION SUMMIT 2011**

BRUSSELS, BELGIUM AND WARSAW, POLAND

The 3rd European Innovation Summit (EIS) "Towards a European Innovation Eco-System" will be organised in two events, in Brussels and in Warsaw.

[www.knowledge4innovation.eu/EIS/default.aspx](http://www.knowledge4innovation.eu/EIS/default.aspx)

19 OCTOBER

**TIMMO-2-USE OPEN WORKSHOP**

GÖTEBORG, SWEDEN

The agenda of this open workshop includes presentations, discussions and demonstrations around different systems in the context of timing in automotive embedded systems.

[www.timmo-2-use.org/events/OpenWorkshop2011.html](http://www.timmo-2-use.org/events/OpenWorkshop2011.html)

2-4 NOVEMBER

**ECLIPSECON EUROPE 2011**

LUDWIGSBURG, GERMANY

[www.eclipsecon.org/europe2011](http://www.eclipsecon.org/europe2011)

15-16 NOVEMBER

**EUROPEAN NANO-ELECTRONICS FORUM**

DUBLIN, IRELAND

[www.nanoelectronicsforum.org](http://www.nanoelectronicsforum.org)

16 NOVEMBER

**ICT DELTA 2011**

THE HAGUE WORLD FORUM, THE NETHERLANDS

[www.ictdelta2011.nl](http://www.ictdelta2011.nl)

18 NOVEMBER

**BITS&CHIPS EMBEDDED SYSTEMS EVENT 2011**

EINDHOVEN, THE NETHERLANDS

[www.embedded-systemen.nl](http://www.embedded-systemen.nl)

25-26 OCTOBER

**ITEA & ARTEMIS CO-SUMMIT 2011**



SCANDIC MARINA CONGRESS CENTER, HELSINKI, FINLAND

The Co-summit will give participants the exceptional opportunity to see over 70 projects combining research excellence with innovation at the project exhibitions of ITEA 2 and ARTEMIS (open on both days).

Furthermore, the programme includes high-level keynotes, plenary family sessions of ITEA and ARTEMIS, project presentations of the Achievement Award 2011 nominees and parallel sessions related to the Co-summit theme 'Cross-border cooperation for Clean Technologies'.

[www.itea2.org/cosummit2011](http://www.itea2.org/cosummit2011)

## ITEA 2 and the ESNA project together with EUREKA at the European Business Summit



The 9th European Business Summit (EBS) – held on 18 and 19 May in Brussels – focused on Europe's place in the global economy, today and tomorrow under the theme 'Europe in the world: leading or lagging?'.

Conference sessions started by focusing on smaller businesses with a session on SMEs & Entrepreneurship during which Luuk Borg, Head of the EUREKA Secretariat presented the EUREKA Network and the Eurostars programme.

As in other years, ITEA 2 joined EUREKA on its stand during the two-day summit. Project leader Olle Olsson of the Swedish Institute of Computer Science showcased the ITEA ESNA project for wireless-sensor network applications – from energy monitoring and management to precision agriculture.



## Hungarian EUREKA Chairmanship for 2011 to 2012

On 1 July 2011, Hungary officially assumed the EUREKA Chairmanship for 2011 to 2012. The Hungarian Chairmanship started with a launch conference in Budapest on 8 July 2011. The aim of the conference was to serve as a forum for stakeholders to discuss how international research, development and innovation cooperation activities – and in particular EUREKA – could contribute to strengthening the competitiveness of European SMEs and enhancing smart growth in the regions. ITEA 2's Rudolf Haggemüller and Fopke Klok were invited to contribute to the conference discussions.

The main priorities for the Hungarian Chairmanship year include:

- Improving the position of EUREKA in the European Research Area (ERA);
- Developing further EUREKA services to finance innovation;
- Promoting industry-driven R&D project generation;
- Facilitating the regional dimension of EUREKA; and
- Addressing in particular the challenges related to the technological sectors agro-food, manufacturing and ICT technologies.

# EUREKA Celebrates its 25th anniversary and achievements in Jerusalem



On 22 June 2011, Minister of Industry, Trade and Labor Shalom Simhon and EUREKA high-level group Chairman Dr Eli Opper hosted a special event in Jerusalem to celebrate the 25th anniversary of the EUREKA initiative, the end of Israel's Chairmanship year and the handover to the new Hungarian Chair for the period July 2011 to June 2012.

#### 25TH ANNIVERSARY CELEBRATION

At the celebratory event, the EUREKA Quarter Century Declaration was adopted by participating ministers and heads of delegation from EUREKA's 40 member countries, reflecting 25 years of achievements by the EUREKA network in contributing to European innovation and R&D and declaring the commitment and support of ministers as the "preferred, most relevant and largest innovation cooperation platform" in Europe and beyond.

"In its 25 years of existence, the EUREKA network has proven to be an effective platform in raising the productivity and competitiveness of national economies and European industries in the world market, and in particular of SMEs," said Minister Simhon.

As part of the meeting, the ITEA 2 project METAVERSE1 was presented by Dr Yesha Shivan, founder of Israeli company Metaverse Labs, one of the partners in the project.

#### EUREKA CLUSTERS SIGN JOINT DECLARATION OF COMMITMENT

During the event, the chairmen of the EUREKA ITEA 2, CATRENE, CELTIC+, EUROGIA and ACQUEAU Clusters signed a Joint Declaration of Commitment with the EUREKA Israeli Chairmanship, aimed at "promoting EUREKA and its different instruments as the leading industrial R&D platform to their natural partners: member countries, European institutions and industry." The declaration calls on the member countries to "continue to promote EUREKA and its instruments, including the EUREKA Clusters."

#### EUREKA: A NEW ERA OF EUROPEAN INNOVATION

EUREKA produced a film 'EUREKA: A New ERA of European Innovation', which was officially released during the Anniversary event. It marks 25 years of achievements of the EUREKA Network, and features interviews with top policy makers, EUREKA leaders and Cluster representatives. The film includes contributions by ITEA 2 Chairman Rudolf Haggenmüller and ITEA 2 3DTESTBENCH project leader Andy De Mets (Barco).

A Youtube version of the film can be viewed at:  
[www.youtube.com/watch?v=eQyjcgR\\_iGI](http://www.youtube.com/watch?v=eQyjcgR_iGI)